

SEQUENCE LISTING

<110> Cahoon, Rebecca E.
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Orozco, Emil M. Jr.

<120> PLANT CELL CYCLIN GENES

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<150> 60/078,735

<151> 1998 March 20

<150> PCT/US99/06047

<151> 1999 March 19

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<212> DNA

<213> Zea mays

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<212> PRT

<213> Zea mays

<400> 2

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Leu Arg Ser Leu Glu Val Asp Pro Gln Arg Arg Ser Arg Ser Asp Tyr
35          40          45
Ile Glu Ala Val Gln Ala Asp Val Thr Ala His Met Arg Ser Ile Leu
50          55          60
Val Asp Trp Leu Val Glu Val Ala Glu Glu Tyr Lys Leu Val Ala Asp
65          70          75          80
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 <222> (101)..(102)

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 115 120 125
 Gln Leu Leu Gly Ile Thr Ser Met Leu Ile Ala Ser Lys Tyr Glu Glu
 130 135 140
 Ile Cys Ala Pro Arg Val Glu Glu Phe Cys Phe Ile Thr Asp Asn Thr
 145 150 155 160
 Tyr Thr Lys Asn Gln Val Leu Lys Met Glu Cys Glu Val Leu Asn Asp
 165 170 175
 Leu Gly Phe His Leu Ser Val Pro Thr Ile Lys Thr Phe Leu Arg Arg
 180 185 190
 Phe Leu Xaa Ala Ala His Ala Ser Gln Lys Ser Pro Trp Ala Thr Leu
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 Gly Tyr Leu
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 <212> DNA
 <213> Zea mays

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<212> PRT
<213> Zea mays

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35 40 45
Val Val Asp Gln Asp Glu Glu Tyr Val Ala Leu Leu Leu Ser Lys Glu
50 55 60
Ser Ala Ser Gly Gly Gly Gly Pro Val Glu Glu Met Glu Asp Trp Met
65 70 75 80

Lys Ala Ala Arg Ser Gly Cys Val Arg Trp Ile Ile Lys Thr Thr Ala
85 90 95
Met Phe Arg Phe Gly Gly Lys Thr Ala Tyr Val Ala Val Asn Tyr Leu
100 105 110
Asp Arg Phe Leu Ala Gln Arg Arg Val Asn Arg Glu His Ala Trp Gly
115 120 125
Leu Gln Leu Leu Met Val Ala Cys Met Ser Leu Ala Thr Lys Leu Glu
130 135 140
Glu His His Ala Pro Arg Leu Ser Glu Phe Pro Leu Asp Ala Cys Glu
145 150 155 160
Phe Ala Phe Asp Ser Ala Ser Ile Leu Arg Met Glu Leu Leu Val Leu
165 170 175
Gly Thr Leu Glu Trp Arg Met Ile Ala Val Thr Pro Phe Pro Tyr Ile
180 185 190
Ser Tyr Phe Ala Ala Arg Phe Arg Glu Thr Ser Ala Gly Arg Ile Leu
195 200 205
Met Arg Ala Val Glu Cys Val Phe Ala Ala Ile Lys Val Ile Ser Ser
210 215 220
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<210> 9
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<212> DNA
<213> Oryza sativa

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<222> (424)

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<210> 10
<211> 181
<212> PRT
<213> Oryza sativa

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Asp Arg Phe Leu Ala Arg Arg Cys Val Asp Arg Asp Lys Glu Trp Ala
35 40 45
Leu Gln Leu Leu Ser Val Ala Cys Leu Ser Leu Ala Ala Lys Val Glu
50 55 60
Glu Arg Arg Pro Pro Arg Leu Pro Glu Phe Lys Leu Asp Met Tyr Asp
65 70 75 80
Cys Ala Ser Leu Met Arg Met Glu Leu Leu Val Leu Thr Thr Leu Lys
85 90 95
Trp Gln Met Ile Thr Glu Thr Pro Phe Ser Tyr Leu Asn Cys Phe Thr
100 105 110
Ala Lys Phe Arg His Asp Glu Arg Lys Ala Ile Val Leu Arg Ala Ile
115 120 125
Glu Cys Ile Phe Ala Ser Ile Lys Val Ile Ser Ser Val Gly Tyr Gln
130 135 140
Pro Ser Thr Ile Ala Leu Ala Ala Ile Leu Ile Ala Arg Asn Lys Glu
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165 170 175
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<210> 11
<211> 2259
<212> DNA
<213> Glycine max

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<210> 14
 <211> 318
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 <213> Glycine max

<400> 14
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      35      40      45

Ser Arg Ser Leu Asp Ala Ser Ala Arg Glu Glu Ser Val Ala Trp Ile
      50      55      60

Leu Lys Val Gln Ala Tyr Tyr Ala Phe Gln Pro Val Thr Ala Tyr Leu
      65      70      75      80

Ser Val Asn Tyr Leu Asp Arg Phe Leu Asn Ser Arg Pro Leu Pro Pro
      85      90      95

Lys Thr Asn Gly Trp Pro Leu Gln Leu Leu Ser Val Ala Cys Leu Ser
      100      105      110

Leu Ala Ala Lys Met Glu Glu Ser Leu Val Pro Ser Leu Leu Asp Leu
      115      120      125

Gln Val Glu Gly Ala Lys Tyr Val Phe Glu Pro Lys Thr Ile Arg Arg
      130      135      140

Met Glu Leu Leu Val Leu Gly Val Leu Asp Trp Arg Leu Arg Ser Val
      145      150      155      160

Thr Pro Phe Ser Phe Leu Asp Phe Phe Ala Cys Lys Leu Asp Ser Thr
      165      170      175

Gly Thr Phe Thr Gly Phe Leu Ile Ser Arg Ala Thr Gln Ile Ile Leu
      180      185      190

Ser Asn Ile Gln Glu Ala Ser Phe Leu Ala Tyr Trp Pro Ser Cys Ile
      195      200      205

Ala Ala Ala Ala Ile Leu His Ala Ala Asn Glu Ile Pro Asn Trp Ser
      210      215      220

Leu Val Arg Pro Glu His Ala Glu Ser Trp Cys Glu Gly Leu Arg Lys
      225      230      235      240

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Glu Lys Ile Ile Gly Cys Tyr Gln Leu Met Gln Glu Leu Val Ile Asp
245 250 255

Asn Asn Gln Arg Lys Pro Pro Lys Val Leu Pro Gln Leu Arg Val Thr
260 265 270

Ile Ser Arg Pro Ile Met Arg Ser Ser Val Ser Ser Phe Leu Ala Ser
275 280 285

Ser Ser Ser Pro Ser Ser Ser Ser Leu Ser Cys Arg Arg Arg Lys Leu
290 295 300

Asn Asn Ser Leu Trp Val Asp Asp Asp Lys Gly Asn Ser Gln
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<212> DNA
<213> Triticum aestivum

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<222> (499)

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<212> PRT
<213> Triticum aestivum

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<222> (68)

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Ser Asp Asn Thr Tyr Thr Arg Glu Gln Ile Leu Arg Met Glu Lys Ala
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<210> 17
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<212> DNA
<213> Zea mays

<220>
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<210> 18
<211> 388
<212> PRT
<213> Zea mays

<400> 18
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1 5 10 15

Glu Glu His Ser Ser Ile Leu Trp Tyr Glu Glu Glu Glu Glu Glu Leu
20 25 30

Glu	Ala	Val	Gly	Arg	Arg	Ser	Gly	Arg	Ser	Pro	Gly	Tyr	Gly	Asp	Asp	
		35					40					45				
Phe	Gly	Ala	Asp	Leu	Phe	Pro	Pro	Gln	Ser	Glu	Glu	Cys	Val	Ala	Gly	
	50					55					60					
Leu	Val	Glu	Arg	Glu	Arg	Asp	His	Met	Pro	Gly	Pro	Cys	Tyr	Gly	Asp	
65					70					75					80	
Arg	Leu	Arg	Gly	Gly	Gly	Gly	Cys	Leu	Cys	Val	Arg	Arg	Glu	Ala	Val	
				85					90					95		
Asp	Trp	Ile	Trp	Lys	Ala	Tyr	Thr	His	His	Arg	Phe	Arg	Pro	Leu	Thr	
			100					105					110			
Ala	Tyr	Leu	Ala	Val	Asn	Tyr	Leu	Asp	Arg	Phe	Leu	Ser	Leu	Ser	Glu	
		115					120					125				
Val	Pro	Asp	Cys	Lys	Asp	Trp	Met	Thr	Gln	Leu	Leu	Ala	Val	Ala	Cys	
	130					135					140					
Val	Ser	Leu	Ala	Ala	Lys	Met	Glu	Glu	Thr	Ala	Val	Pro	Gln	Cys	Leu	
145					150					155					160	
Asp	Leu	Gln	Glu	Val	Gly	Asp	Ala	Arg	Tyr	Val	Phe	Glu	Ala	Lys	Thr	
				165					170					175		
Val	Gln	Arg	Met	Glu	Leu	Leu	Val	Leu	Thr	Thr	Leu	Asn	Trp	Arg	Met	
			180					185					190			
His	Ala	Val	Thr	Pro	Phe	Ser	Tyr	Val	Asp	Tyr	Phe	Leu	Asn	Lys	Leu	
		195					200					205				
Asn	Asn	Gly	Gly	Ser	Thr	Ala	Pro	Arg	Ser	Cys	Trp	Leu	Leu	Gln	Ser	
	210					215					220					
Ala	Glu	Leu	Ile	Leu	Arg	Ala	Ala	Arg	Gly	Thr	Gly	Cys	Val	Gly	Phe	
225					230					235					240	
Arg	Pro	Ser	Glu	Ile	Ala	Ala	Ala	Val	Ala	Ala	Ala	Val	Ala	Gly	Asp	
				245					250					255		
Val	Asp	Asp	Ala	Asp	Gly	Val	Glu	Asn	Ala	Cys	Cys	Ala	His	Val	Asp	
			260					265					270			
Lys	Glu	Arg	Val	Leu	Arg	Cys	Gln	Glu	Ala	Ile	Gly	Ser	Met	Ala	Ser	
		275					280					285				
Ser	Ala	Ala	Ile	Asp	Asp	Ala	Thr	Val	Pro	Pro	Lys	Ser	Ala	Arg	Arg	
	290					295					300					
Arg	Ser	Ser	Pro	Val	Pro	Val	Pro	Gln	Ser	Pro	Val	Gly	Val	Leu	Asp	
305					310					315					320	
Ala	Ala	Pro	Cys	Leu	Ser	Tyr	Arg	Ser	Glu	Glu	Ala	Ala	Thr	Ala	Thr	
				325					330					335		
Ala	Thr	Ala	Thr	Ser	Ala	Ala	Ser	His	Gly	Ala	Pro	Gly	Ser	Ser	Ser	
			340					345					350			
Ser	Ser	Ser	Thr	Ser	Pro	Val	Thr	Ser	Lys	Arg	Arg	Lys	Leu	Ala	Ser	
		355					360					365				
Arg	Cys	Asp	Gly	Ser	Cys	Ser	Asp	Arg	Ser	Lys	Arg	Ala	Pro	Ala	Gln	
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Trp Thr Lys Glu
385

<210> 19
<211> 481
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<213> Oryza sativa

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 tctccgccgn cgacatccag aggggagagg agttcatgtt cgacgaggcg aaaatccagc 180
 gcatggagca gatggtgctc aacgcgctgg agtggcggac gcgctccgtc acgcgctcgc 240
 ccttcctcgg nttctttctc tccgcgtggg tcccgcgaagc cgcggcaccc ggcgctgctc 300
 gatgccatca nggccgcgcc gtcgagctcc tcctccgcgt ctaagccggg angtgaacna 360
 tgggtgggagt tctccccctt cgggtggccgg ccgncgcggg tctcctcncln gccgncggan 420
 aaggntccg gnngcccaaa ctccctcnct tccaaanctg nnggccccgn tttgncccct 480
 t 481

<210> 20
 <211> 110
 <212> PRT
 <213> Oryza sativa

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 <222> (26)

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<220>
 <221> UNSURE
 <222> (100)

<400> 20
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 Pro Arg Leu Leu Ala Ile Ser Cys Leu Xaa Leu Ala Ala Lys Met Gln
 20 25 30
 Arg Ala Ala Ala Ile Ser Ala Xaa Asp Ile Gln Arg Gly Glu Glu Phe
 35 40 45
 Met Phe Asp Glu Ala Lys Ile Gln Arg Met Glu Gln Met Val Leu Asn
 50 55 60
 Ala Leu Glu Trp Arg Thr Arg Ser Val Thr Pro Leu Ala Phe Leu Gly
 65 70 75 80
 Phe Phe Leu Ser Ala Trp Phe Pro Gln Ala Ala Ala Pro Gly Ala Ala
 85 90 95

Arg Cys His Xaa Gly Arg Ala Val Glu Leu Leu Leu Arg Val
100 105 110

<210> 21
<211> 789
<212> DNA
<213> Triticum aestivum

<400> 21
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ctcaccgcct cgacccaaaat gtgatttgag gcaaattctg cgtttgaggc aaggacaata 120
aaagtgatgg agcttttggt cttcagcacc ttgaaatgga ggatgcaagc tggtactgct 180
tgctcgttta ttgactactt cctttgcaaa ttcaatgatc atgacacacc ctccatgctt 240
gcattctcct gctcaactga cctcatcctg agcacaacta agtgagctga ttttttggtg 300
ttcagacatt cagagattgc tggaagtgtt gcacttcctt catttgaggga gcacaagact 360
tcagttgtcg aaatggctac aactaattgc aagtatataa acaagggagt gtgatgtgac 420
aggaaagatc ctgatgaagt gcttccttta tggaatgcct atctgaagtt tggactaaga 480
gacatgcttt aattggctta gtaaaaaata cttgctaaag agaaataaga ttcaaagtag 540
atgtttttat tgtagattag gatattgtgtg ttctgccacc ggttcgactt ctcatattag 600
aaggcaagca gttagtcat atcttactac tttgcactat tgtagatgga tgggtgaggga 660
ttgagaggct actactatta atgtgcgtaa actttgcac tttagctctc taaatgaaac 720
cggtgatggt taacctgaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 780
aaaaaaaaa

<210> 22
<211> 163
<212> PRT
<213> Triticum aestivum

<220>
<221> UNSURE
<222> (28)

<220>
<221> UNSURE
<222> (95)

<220>
<221> UNSURE
<222> (138)

<400> 22
His Leu Arg Ala Thr Arg Gly Cys Pro Arg Pro Val Arg Arg Asp His
1 5 10 15
Pro Ser Ser Asp Leu Thr Ala Ser Thr Lys Met Xaa Phe Glu Ala Asn
20 25 30
Ser Ala Phe Glu Ala Arg Thr Ile Lys Val Met Glu Leu Leu Val Phe
35 40 45
Ser Thr Leu Lys Trp Arg Met Gln Ala Val Thr Ala Cys Ser Phe Ile
50 55 60
Asp Tyr Phe Leu Cys Lys Phe Asn Asp His Asp Thr Pro Ser Met Leu
65 70 75 80
Ala Phe Ser Cys Ser Thr Asp Leu Ile Leu Ser Thr Thr Lys Xaa Ala
85 90 95
Asp Phe Leu Val Phe Arg His Ser Glu Ile Ala Gly Ser Val Ala Leu
100 105 110
Pro Ser Phe Gly Glu His Lys Thr Ser Val Val Glu Met Ala Thr Thr
115 120 125

Asn Cys Lys Tyr Ile Asn Lys Gly Val Xaa Cys Asp Arg Lys Asp Pro
 130 135 140

Asp Glu Val Leu Pro Leu Trp Asn Ala Tyr Leu Lys Phe Gly Leu Arg
 145 150 155 160

Asp Met Leu

<210> 23
 <211> 603
 <212> DNA
 <213> Zea mays

<220>
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 <222> (441)

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<400> 23

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gcgcgctccg	gctcggcgac	cagccctgga	tgccgcgcct	agccgccgtc	acctgcttcg	180
cgctcgccgc	caaggtcgag	gagacgcgcg	tgccgccgct	cctcgacctc	cagctctacg	240
ccgccgctga	cgccgcggat	ccgtacgtat	tcgaggccaa	gacggtgcgc	cggatggagc	300
tgctcgtgct	ctccgcgctt	gggtggcgga	tgcaccctgt	cacgcccttc	tcctacctcc	360
agcccgtcct	cgccgacgct	gcgacgcgcc	tgcgtagctg	cgagggcgtc	ctgctcgcg	420
tcatggccga	ctggaggtgg	cctcggcacc	ggccttcggc	gtgggccgcc	gccgcgttgc	480
tgatcacagc	cgccgccggc	gacggcgggc	acggcgacgg	cgacacggag	ctcctggcgc	540
tcatcaatgc	ccccgaggac	aagaccgccg	agtgtgccaa	gatcatctcc	gaggtgacgg	600
gcatgagctt	cctcgccctgc	gatgtcggcg	tgagcgccgg	aaataagcgt	aagcacgcgg	660
cggcgcagtt	gtactcgccg	ccgccgagcc	cgagcgggct	gatcggcgcg	ctgtcctgct	720
tcagctgcga	gagctcgacg	tcgccaccgc	ctatggctgc	ggcggtcggc	ccgtgggcgc	780
cgtcggcgctc	cgtgtccgtg	tcgtcctctc	cagagccacc	aggtcggggc	cccaagcgcg	840

cagcggcggc gtcggcgctcg gcgtcggcgt cagccgggggt cgcgccaccg gtccagggtcc 900
 cgcacacagct acccccccgac gaggagagacc gcgacgcctg gccgtccacc tgcgccgcgt 960
 gacgcaccgt gccggaaacg gtgcctatgg cgagaccgcc gttcgggtggc ggtggagaat 1020
 ggagaacaag gagcatcatt ggctcgcgtc ggtgagcagg agaacgaact attttgccca 1080
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<210> 24
 <211> 318
 <212> PRT
 <213> Zea mays

<400> 24
 Asn Ser Ala Arg Ala Ala Val Gly Trp Val Ser Arg Ala Ala Ala Arg
 1 5 10 15
 Leu Gly Phe Ser Ala Leu Thr Ala Ala Leu Ala Ala Ala Tyr Leu Asp
 20 25 30
 Arg Cys Phe Leu Pro Gly Gly Ala Leu Arg Leu Gly Asp Gln Pro Trp
 35 40 45
 Met Ala Arg Leu Ala Ala Val Thr Cys Phe Ala Leu Ala Ala Lys Val
 50 55 60

Glu Glu Thr Arg Val Pro Pro Leu Leu Asp Leu Gln Leu Tyr Ala Ala
 65 70 75 80
 Ala Asp Ala Ala Asp Pro Tyr Val Phe Glu Ala Lys Thr Val Arg Arg
 85 90 95
 Met Glu Leu Leu Val Leu Ser Ala Leu Gly Trp Arg Met His Pro Val
 100 105 110
 Thr Pro Phe Ser Tyr Leu Gln Pro Val Leu Ala Asp Ala Ala Thr Arg
 115 120 125
 Leu Arg Ser Cys Glu Gly Val Leu Leu Ala Val Met Ala Asp Trp Arg
 130 135 140
 Trp Pro Arg His Arg Pro Ser Ala Trp Ala Ala Ala Ala Leu Leu Ile
 145 150 155 160
 Thr Ala Ala Ala Gly Asp Gly Gly Asp Gly Asp Gly Asp Thr Glu Leu
 165 170 175
 Leu Ala Leu Ile Asn Ala Pro Glu Asp Lys Thr Ala Glu Cys Ala Lys
 180 185 190
 Ile Ile Ser Glu Val Thr Gly Met Ser Phe Leu Ala Cys Asp Val Gly
 195 200 205
 Val Ser Ala Gly Asn Lys Arg Lys His Ala Ala Ala Gln Leu Tyr Ser
 210 215 220
 Pro Pro Pro Ser Pro Ser Gly Val Ile Gly Ala Leu Ser Cys Phe Ser
 225 230 235 240
 Cys Glu Ser Ser Thr Ser Ala Thr Ala Met Ala Ala Ala Val Gly Pro
 245 250 255
 Trp Ala Pro Ser Ala Ser Val Ser Val Ser Ser Ser Pro Glu Pro Pro
 260 265 270
 Gly Arg Ala Pro Lys Arg Ala Ala Ala Ala Ser Ala Ser Ala Ser Ala
 275 280 285

Ser Ala Gly Val Ala Pro Pro Val Gln Val Pro His Gln Leu Pro Pro
 290 295 300

Asp Glu Glu Ser Arg Asp Ala Trp Pro Ser Thr Cys Ala Ala
 305 310 315

<210> 25
 <211> 674
 <212> DNA
 <213> Glycine max

<220>
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 <222> (527)

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<400> 25
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 tccttctcca tcggggcatt ccgcactctc catcccataa aagtcccaga tccaagatgg 120
 cttaccacca tcaaaaatcc cttttggaca ccctatactg ctccgaagag cattggatag 180
 gggaagggtga atttgaccaa gcagaggagg agtacggtaa cagtaatagc aatagtagca 240
 gcaccttagt aaacaactcc cctgagtcct cccctcattt gttgctcgaa agcgacatgt 300
 tttgggacga acaagagttg gcatcgctgt tggagaaaga acaacacaac ccactaagca 360
 cttgctgtct ccaaagcaac cctgccttgg aggggtgctcg catagaagcc gtggagtgga 420
 ttctcaaagt aaacgcccac tactccttct ctgccctcac cgctgttctt gctgtcaact 480
 actttgaccg ttttctcttc agcttccgct ttcagaatga cattaancca tggatgactc 540
 ggggtcgctg ccgtcgcttg nctctccctc gctgccaaag tgggcgagac acacgttccc 600
 tttcttattt gacccttcaa caaagtggga ggaggagtan atnctttgtt ccaagccaaa 660
 gacgattaaa aaag 674

<210> 26
 <211> 186
 <212> PRT
 <213> Glycine max

<220>
 <221> UNSURE
 <222> (137)

<220>
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 <222> (149)

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 <221> UNSURE
 <222> (175)..(176)

<400> 26
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Glu Glu His Trp Ile Gly Glu Gly Glu Phe Asp Gln Ala Glu Glu Glu
 20 25 30

Tyr Gly Asn Ser Asn Ser Asn Ser Ser Ser Thr Leu Val Asn Asn Ser
 35 40 45
 Pro Glu Ser Ser Pro His Leu Leu Leu Glu Ser Asp Met Phe Trp Asp
 50 55 60
 Glu Gln Glu Leu Ala Ser Leu Leu Glu Lys Glu Gln His Asn Pro Leu
 65 70 75 80
 Ser Thr Cys Cys Leu Gln Ser Asn Pro Ala Leu Glu Gly Ala Arg Ile
 85 90 95
 Glu Ala Val Glu Trp Ile Leu Lys Val Asn Ala His Tyr Ser Phe Ser
 100 105 110
 Ala Leu Thr Ala Val Leu Ala Val Asn Tyr Phe Asp Arg Phe Leu Phe
 115 120 125
 Ser Phe Arg Phe Gln Asn Asp Ile Xaa Pro Trp Met Thr Arg Gly Arg
 130 135 140
 Cys Arg Arg Leu Xaa Leu Pro Arg Cys Gln Ser Gly Arg Asp Thr Arg
 145 150 155 160

Ser Leu Ser Tyr Leu Thr Leu Gln Gln Ser Gly Arg Arg Ser Xaa Xaa
 165 170 175

Phe Val Pro Ser Gln Arg Arg Leu Lys Lys
 180 185

<210> 27
 <211> 554
 <212> DNA
 <213> Glycine max

<400> 27
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 ttcacacact gagacacaca gagagagaaa aataaagggg gtgatgggtg tcttactgag 120
 tgttttcttt ttataatgaa caaagaactg cacaccctct tcttcaccga agaagaagat 180
 ggcaattcag caccacaatg accaactaga gcataatgaa aatgtctcat ctgtccttga 240
 tgccctttac tgtgacgaag gaaagtggga agaggaagag gaggagaaag aagaagaaga 300
 agatgaaggt gaaaatgaaa gtgaagtgc aacaaacact gcaacttgct ttttccctct 360
 gctcttggtg gagcaagact tgttctggga agatgaggaa ctaaactcta tcttttccaa 420
 agagaaggtt caacatgaag aagcctatgg tataacaatc tgaacagtga tgtgtataac 480
 aacaacaaca atactagtat ataatgtgat ttggctcttg ctcttcagct cgtcggagcg 540
 tgatgatgct gaat 554

<210> 28
 <211> 94
 <212> PRT
 <213> Glycine max

<400> 28
 Met Ala Ile Gln His His Asn Asp Gln Leu Glu His Asn Glu Asn Val
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Ser Ser Val Leu Asp Ala Leu Tyr Cys Asp Glu Gly Lys Trp Glu Glu
 20 25 30

Glu Glu Glu Glu Lys Glu Glu Glu Glu Asp Glu Gly Glu Asn Glu Ser
 35 40 45

Glu Val Thr Thr Asn Thr Ala Thr Cys Leu Phe Pro Leu Leu Leu Leu
 50 55 60

Glu Gln Asp Leu Phe Trp Glu Asp Glu Glu Leu Asn Ser Ile Phe Ser
65 70 75 80

Lys Glu Lys Val Gln His Glu Glu Ala Tyr Gly Ile Thr Ile
85 90

<210> 29
<211> 372
<212> PRT
<213> Catharanthus roseus

<400> 29

Met Ala Asp Lys Glu Asn Cys Ile Arg Val Thr Arg Leu Ala Lys Lys
1 5 10 15

Arg Ala Val Glu Ala Met Ala Ala Ser Glu Gln Gln Arg Pro Ser Lys
20 25 30

Lys Arg Val Val Leu Gly Glu Leu Lys Asn Leu Ser Ser Asn Ile Ser
35 40 45

Ser Ile Gln Thr Tyr Asp Phe Ser Ser Gly Pro Gln Lys Gln Gln Lys
50 55 60

Asn Lys Asn Lys Arg Lys Ala Lys Glu Ser Leu Gly Phe Glu Val Lys
65 70 75 80

Glu Lys Lys Val Glu Glu Ala Gly Ile Asp Val Phe Ser Gln Ser Asp
85 90 95

Asp Pro Gln Met Cys Gly Ala Tyr Val Ser Asp Ile Tyr Glu Tyr Leu
100 105 110

His Lys Met Glu Met Glu Thr Lys Arg Arg Pro Leu Pro Asp Tyr Leu
115 120 125

Asp Lys Val Gln Lys Asp Val Thr Ala Asn Met Arg Gly Val Leu Ile
130 135 140

Asp Trp Leu Val Glu Val Ala Glu Glu Tyr Lys Leu Leu Pro Asp Thr
145 150 155 160

Leu Tyr Leu Thr Val Ser Tyr Ile Asp Arg Phe Leu Ser Met Asn Ala
165 170 175

Leu Ser Arg Gln Lys Leu Gln Leu Leu Gly Val Ser Ser Met Leu Ile
180 185 190

Ala Ser Lys Tyr Glu Glu Ile Ser Pro Pro His Val Glu Asp Phe Cys
195 200 205

Tyr Ile Thr Asp Asn Thr Tyr Lys Lys Glu Glu Val Val Lys Met Glu
210 215 220

Ala Asp Val Leu Lys Phe Leu Lys Phe Glu Met Gly Asn Pro Thr Ile
225 230 235 240

Lys Thr Phe Leu Arg Arg Leu Thr Arg Val Val Gln Asp Gly Asp Lys
245 250 255

Asn Pro Asn Leu Gln Phe Glu Phe Leu Gly Tyr Tyr Leu Ala Glu Leu
260 265 270

Ser Leu Leu Asp Tyr Gly Cys Val Lys Phe Leu Pro Ser Leu Ile Ala
275 280 285

Ser Ser Val Ile Phe Leu Ser Arg Phe Thr Leu Gln Pro Lys Val His
 290 295 300
 Pro Trp Asn Ser Leu Leu Gln His Asn Ser Gly Tyr Lys Pro Ala Asp
 305 310 315 320
 Leu Lys Glu Cys Val Leu Ile Ile His Asp Leu Gln Leu Ser Lys Arg
 325 330 335
 Gly Ser Ser Leu Val Ala Val Arg Asp Lys Tyr Lys Gln His Lys Phe
 340 345 350
 Lys Cys Val Ser Thr Leu Thr Ala Pro Pro Ser Ile Pro Asp Glu Phe
 355 360 365
 Phe Glu Asp Ile
 370
 <210> 30
 <211> 335
 <212> PRT
 <213> Arabidopsis thaliana

<400> 30
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 20 25 30
 Gly Glu Ser Thr Val Asp Phe Ser Ser Ser Glu Val Asp Ser Trp Pro
 35 40 45
 Gly Asp Ser Ile Ala Cys Phe Ile Glu Asp Glu Arg His Phe Val Pro
 50 55 60
 Gly His Asp Tyr Leu Ser Arg Phe Gln Thr Arg Ser Leu Asp Ala Ser
 65 70 75 80
 Ala Arg Glu Asp Ser Val Ala Trp Ile Leu Lys Val Gln Ala Tyr Tyr
 85 90 95
 Asn Phe Gln Pro Leu Thr Ala Tyr Leu Ala Val Asn Tyr Met Asp Arg
 100 105 110
 Phe Leu Tyr Ala Arg Arg Leu Pro Glu Thr Ser Gly Trp Pro Met Gln
 115 120 125
 Leu Leu Ala Val Ala Cys Leu Ser Leu Ala Ala Lys Met Glu Glu Ile
 130 135 140
 Leu Val Pro Ser Leu Phe Asp Phe Gln Val Ala Gly Val Lys Tyr Leu
 145 150 155 160
 Phe Glu Ala Lys Thr Ile Lys Arg Met Glu Leu Leu Val Leu Ser Val
 165 170 175
 Leu Asp Trp Arg Leu Arg Ser Val Thr Pro Phe Asp Phe Ile Ser Phe
 180 185 190
 Phe Ala Tyr Lys Ile Asp Pro Ser Gly Thr Phe Leu Gly Phe Phe Ile
 195 200 205
 Ser His Ala Thr Glu Ile Ile Leu Ser Asn Ile Lys Glu Ala Ser Phe
 210 215 220

Lys Val Glu Glu Thr Gln Val Pro Leu Leu Leu Asp Phe Gln Val Glu
 165 170 175
 Asp Ala Lys Tyr Val Phe Glu Ala Lys Thr Ile Gln Arg Met Glu Leu
 180 185 190
 Leu Val Leu Ser Ser Leu Lys Trp Arg Met Asn Pro Val Thr Pro Leu
 195 200 205
 Ser Phe Leu Asp His Ile Ile Arg Arg Leu Gly Leu Arg Asn Asn Ile
 210 215 220
 His Trp Glu Phe Leu Arg Arg Cys Glu Asn Leu Leu Leu Ser Ile Met
 225 230 235 240
 Ala Asp Cys Arg Phe Val Arg Tyr Met Pro Ser Val Leu Ala Thr Ala
 245 250 255
 Ile Met Leu His Val Ile His Gln Val Glu Pro Cys Asn Ser Val Asp
 260 265 270
 Tyr Gln Asn Gln Leu Leu Gly Val Leu Lys Ile Asn Lys Glu Lys Val
 275 280 285

Asn Asn Cys Phe Glu Leu Ile Ser Glu Val Cys Ser Lys Pro Ile Ser
 290 295 300
 His Lys Arg Lys Tyr Glu Asn Pro Ser His Ser Pro Ser Gly Val Ile
 305 310 315 320
 Asp Pro Ile Tyr Ser Ser Glu Ser Ser Asn Asp Ser Trp Asp Leu Glu
 325 330 335
 Ser Thr Ser Ser Tyr Phe Pro Val Phe Lys Lys Ser Arg Val Gln Glu
 340 345 350
 Gln Gln Met Lys Leu Ala Ser Ser Ile Ser Arg Val Phe Val Glu Ala
 355 360 365
 Val Gly Ser Pro His
 370